

Abstract

This work presents the results of our research of cell-free nucleic acids (cfNA). The first part shows changes in methylation patterns of immune response genes promoters that are detectable in plasma during the hemodialysis sessions and also differences in methylation between patients and healthy subjects. Alterations include genes that play their role in the regulation of hematopoiesis and these changes are in close relation with the need of anemia therapy. In the other plasma cfNA study we detected miRNA signatures in patients with acute myeloid leukemia at diagnosis (6 highly abundant miRNAs found) and in remission achieved after standard chemotherapy (trend to normalization, lower levels of these miRNAs). Another part of work presents data from the study of potential non-invasive biomarker of bladder cancer. The amounts of cfDNA in urine are higher in patients than in healthy subjects and there were found 5 down-regulated miRNAs. Simultaneously it was established set of 30 miRNAs that are constantly present in urine supernatants independently on sex, age and healthy status of subjects. The last part presents analysis of cell-free fetal DNA. We analyzed differences between a new quantification method - droplet digital PCR and real-time PCR which is used routinely nowadays. Slightly more precise was found ddPCR. Shortly is mentioned a study that compares levels of cfDNA in pregnant patients with antiphospholipid syndrome with healthy women. There were no differences found.